



(Viv 00 Deb)

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Patents Copyrights Trademarks  
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June 3, 2002

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#### DEBIT SUMMARY VIVO COM

Billed on 03May02 for Apr 02 Services \$2,305.00  
RECEIVED Check 1117 on 16May02 . . (\$2,305.00)

#### Services and Disbursements for May 02

#### Crt 10 Smt.ISw - Smart Internet Switch Assignment Matters

06May	Tele to JW Assignment Details Witness/Notary?	10:55-11:10	15/min - 60	
06May	Tele message from JW			NO CHARGE
08May	Prepared new Assignment Document Vivocom Inc to Vivocom LLC with cover letter	09:40-10:30	50/min - 200	
17May	Reviewed Assignment Prepared Recording Papers Paid PTO Fee. . . . . Filed with PTO 21 May 02 file copies to JW 21 May 02	09:30-10:05	35/min - 140	
				\$400.00

#### Viv 12 FW.Adp - Firewall Adaptor - Patent Application

09May	Edit Claims/outline Fax to NK	08:00-08:40	40/min - 160	
09May	Tele to NK	11:12-11:25	10/min - 40	

Exhibit C - SN 10\676,174  
Inventors Krtolica/Kukoleca  
Two Sheets

13May	Edit Claims/outline Fax to NK 09:11	08:30-09:05	35/min - 140
17May	Tele to NK		10/min - 40
20May	Edit Claims/outline	07:15-08:20	65/min - 260
22May	Edit Claims/outline Fax to NK 08:42	08:05-08:40	35/min - 140
29May	Tele to NK	10:46-10:55	10/min - 40
29May	Edit Claims/outline	11:10-12:00	50/min - 200
30May	Rough Drawing Fig 1	14:35-15:15	40/min - 80
31May	Rough Drawing Fig 2 3 4	11:15-12:15	60/min - 120
03Jun	Summary Report with Claims and Drawings		NO CHARGE

. . . . . \$1,220.00

May Disbursements	May Services
\$40.00	\$1,620.00

Total due for May 02	\$1,660.00
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Adria.Com  
ICU  
Internet  
cme  
unlimit. NO App  
10114  
winvale  
CUT  
ST  
95116

9:56  
11:26  
11:26

15:36  
17 June 2  
Standard  
aware  
based  
comple  
can  
own

FIREWALL ADAPTER FOR STANDARD BASED AWARE  
COMMUNICATION SYSTEM AND METHOD

by Inventors

Nenad Krtolica and  
Dalibor Kukoleca

~~Ned 650 964 5006 105~~

Ned - new stuff, questions and areas that need attention  
are underlined

~~tunneling - one "1"~~  
~~standard aware - no hyphen~~

TECHNICAL FIELD

This invention relates to routing voice/video/data communications through firewalls, and more particularly to such routing through selected ~~logical~~ ports with minimal security risk.

BACKGROUND

PA slow net - UDP for vv saves BW, drop OK - data separate on TCP

Heretofore, security firewalls interfered with smooth exchange of voice/video/data information over the internet.

This difficulty can be overcome by temporarily reducing or removing firewall protection.

Firewalls are established and maintained by residual software (and hardware) to prevent unauthorized entry into the host LAN (local area network) and unauthorized access to local hardware and software, and other resources.

?local data?

They are typically installed between the host system and the outside world, especially the internet.

However, firewalls may also be intra-organizational (within a LAN), between the protected host data and other departments of a host organization.

sw  
client  
app  
end  
point  
Exhibit D - SN 10/676,174  
Inventors Krtolica/Kukoleca  
Nine Sheets

Without firewalls, casual hackers and other intruders may enter the host by various means including

- 5        uncovering the password  
           and logging-in as a legitimate user,  
           through Trojan Horse tactics,  
 10        employing e-mail techniques,  
           open port  
           and other low-level strategies.

- 15        Understandably, serious organizations are reluctant to reduce firewall security.

- 20        An alternative to removing firewall protection is to install costly, standard aware

- 25        !! name or type !!  
           software and hardware, such as a pix firewall and router  
           ??from !prominent supplier! Cisco??.

- 30        ? SHORT DEFINITION OF STANDARD BASED!AWARE ?

Standard based!aware communication tools are selected from a pool of commercially available, commonly used, compatible software and hardware.

- 35        A typical user may have twenty or so  
           of these standard based!aware clients (applications)  
           residing locally on their system.

- 40        Voice and video clients include programs based on H323,  
           MGCP, and SIP, and data transfer clients are generally  
           T120 based.

- 45        Standard aware programs recognize industry standard header configurations within

- 50        ?? the communication data packets.

! does not need upgraded router or firewall

Currently the four major standard configurations are

Viv12FW.Adp Krtolica-Kukoleca FW Adapter June 12, 2002

*Injection client  
on  
private  
or  
servers*

*CLIENT SUPPORT FOOT-VA S-VV-VS*

*OK ?*

3

2  
X  
3 supporting  
H323, MGCP, and SIP for voice and video communications,  
and T120 for data transfer.

5 Both parties need compatible,  
standard aware equipment, which is typically  
complex, requiring an on-site, network security  
administrator to set-up and maintain.

10 The firewall router may be located at any entry point  
into the protected LAN such as  
before first server,  
before the frontend router, or  
before the modem end router.

15  
The desired seamless communication requires multiple  
logical!FW ports in the firewall which are serially  
opened one at a time.

20 Each data packet stream forming a communication crosses  
the firewall through a different port.

25 For security reasons,  
each next-open-port in the series  
is selected at random from an  
available port population of 65,511 out of a  
total port population of 65,535.

#### SUMMARY

35 It is therefore an object of this invention to  
provide a standard based!aware, firewall friendly  
communication system between a sending party(s) and a  
receiving party(s).

40 Each party's local system needs only  
standard based, user friendly, off-the-shelf,  
low priced hardware and software,  
plus the present firewall adapter.

45 ??  
The firewall adapter is standard based!aware computer  
program which permits multiplex tunneling at a specified  
port.

50 Both parties may already have the required standard based  
clients in their systems, and use them regularly for  
communication over the internet.

Neither party needs to install any new hardware or software or review any new operating manuals for firewalls or routers

5 ?? other than the present firewall adapter in order to !!

10 It is another object of this invention to provide such a standard based system in which the sending party's system need not be the same as the receiving party's system or even be compatible therewith.

15 The present firewall adapter is "portable" having universal application with various operating systems such as

major commercial feature

20 ?? Windows and Linux, all flavors of Unix

25 It is another object of this invention to provide such a standard based system which maintains high security by employing a single, pre-selected port in a customized set-up configuration.

30 Port ~~80~~ 80 is the default port which is open for busy - heavy traffic open a non-default port exclusively for selected traffic  
 35 employing a single custom set-up port.

40 It is another object of this invention to provide such a standard based system which provides increased security by opening a private channel within a logical FW port.

45 coding and scrambling - hard to tap

# 50 BRIEF DESCRIPTION OF THE DRAWING!S

Further objects and advantages of the present standard based system and the firewall adapter will become apparent from the following detailed description

and drawing!s in which:

FIGURE 1 is a block diagram of communication system  
10 across internet 10N in which sending party 10S has  
5 firewall 18S and receiving party 10R has firewall 18R.

FIGURE 2 ? DO WE NEED MORE FIGURES ?

#### 10 REFERENCE NUMERALS IN DRAWINGS

The table below lists the reference numerals  
employed in the figures, and identifies the element  
designated by each numeral.

15	10 Standard Based Communication System 10
	10N Internet 10N
	10R Receiving Party 10R
	10S Sending Party 10S
	12D Data Packets 12D
20	14M Format Monitor 14M
	16R Packer Redirector 16R
	18F Security Firewall 18F
	18P Open Port 18P

25

#### STANDARD BASED SYSTEM (FIG. 1)

##### DEFINE NET

a wide area communication network such as the internet or  
30 a narrow area network such as a local area network (LAN)

Standard based system 10 supports firewall friendly  
communication between sending station 10S and receiving  
station 10R across a communication network such as  
35 internet 10N.

The sending and receiving parties may be  
individuals using simple PCs  
at a single work station,  
40 or large organizations using complex computers and  
machines.

logical channel within port  
65k ports  
45 thousands of channels - limited by BW

firewall 12S 12R  
prepares open channel both sides

50 Each station has a standard based communication client  
//S and //R

??

netmeeting - vid voi data

cucme  
 intel phone - voi vid  
 net to phone - voi

5

Firewall adapters //S and //R are positioned between the communication client and the firewall.

10

multi ports ? four or more to single multiplex port  
 four people talking at once

local ports  
 firewall ports  
 internet ports

15

logical ports  
 internal/external

20

Sending data packet stream 12S from sending station 10S  
 passes from the sending firewall adapter through the  
 sending firewall, across internet //, through the  
 receiving firewall

25

The internet contains proxy server // for NAT (network address translations)

LAN not regular IP address  
 visible for outside

30

private network address starting with 192

problem with private address  
 calling pc sees real router not private address

35

multiports to one entry point

40

? opens tunnel with many channels - one port

many parallel connections - density and thru put

F2 port tunneling for security  
 ? buried in

45

tunneling works with all proxy systems

50

#### METHOD OF FIREWALL FRIENDLY OPERATION

The primary steps of the general method of standard based communication is described below.

The apparatus employed in carrying out this method is

Viv12FW.Adp Krtolica-Kukoleca FW Adapter June 12, 2002



disclosed in FIG.s 1-?, and in the related detailed descriptions.

5        Providing firewall 18F between sending party 10S and receiving party 10R.

10        Firewalls are typically established when a new system comes on line, and are maintained continuously.

15        Opening at least one logical!FW port in the firewall. This open port may be port 8080 which is normally open for public interface.

Any other port may be employ as the open port.

20        More than one port may be opened simultaneously to improve communication capacity.

However, minimizing the number of open ports reduced the security risk.

25

30        Monitoring traffic outside the firewall. Format monitor device 14M examines the format of each incoming data packet.

35        Packets with expected formats are accepted, and packets with alien formats are discarded.

Generally, the accepted data packets have either of the following two major ITU (international telecommunication union) formats:

40        T120 data format  
              (white board applications,  
              file transfers, etc.),

or

45        H323 data format  
              (voice and video).

Each format has particular delivery and communication rules.

50        ? heather front end - structure  
              specified recipients

Redirecting accepted traffic to the open port in the firewall by means of packet redirector 16R.

5

Tunnelling the redirect traffic through the firewall by pushing data packets through the open port.

10

The tunnelling is bidirectional. The receiving party may transmit!send communications to the sending party through the same open port in the firewall.

15

The tunneled data packets are then played (voice), displayed (video), or processed (data).

20

The general method may have the following additional steps:

Selecting another open port in the firewall. Logical port 8080 is the default port in many systems.

25

Overuse of port 8080 may crowd the traffic and load the port bandwidth limitations.

? roll-off - loss of data ?

30

The parties may select another port which has less traffic.

35

This selection may be executed automatically by the host system as traffic density approaches a specified load.

#### CONSUMER PARTY LINE

40

The present standard based system may provide internet communication between individual PCs (or groups of PCs)

45

? YOU GUYS CAN TALK BE THROUGH THIS SERVICE ?

50

consumer party line  
9.95/mo  
piece of a web page  
from outlook

#### CORPORATE CONFERENCE CALL

The present standard based system may also provide internet conference communication within an organization.

? YOU GUYS CAN TALK BE THROUGH THIS SERVICE ?

5

corporate conference call  
air conference sw  
company directory

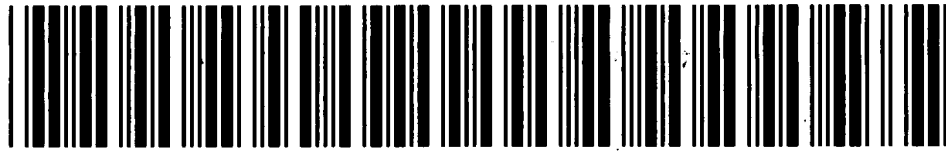
10

IP call center router

Nenad 650 964 5006 105

These are our claims in nearly final form  
plus rough drawings.  
We are about half finished

# IDS REFERENCES



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☐ FOR

# OUTLINE OF CLAIMS

## 1) Method

Sending/Receiving Units/Systems  
 Communication Network  
 Firewall - local client ports  
 Standard Aware - in/out information

## STEPS

Providing Firewall Adapter  
 Determining S/R Adapter Port  
 Establishing Communication  
 Multiplexing outgoing  
 Sending  
 Receiving  
 DeMultiplexing incoming

## STANDARD BASED

fx\*\* 2) Standard Aware is Standard Based

## FIREWALLS

fx\*\* 3) One Firewall

fx\*\* 4) Two Firewalls S/R

## COMMUNICATION NETWORK

fx\*\* 5) Network Protocol

\*

fx \* \*\* 6) TCP

\*

fx \* \* \*\* 7) Voice Video

\*

fx \* \*\* 8) Internet

\*

fx \* \*\* 9) WAN

\*

fx \* \*\* 10) LAN

## PORT DETERMINATION

fx\*\* 11) Select Port

fx\*\* 12) Range of Ports

fx\*\* 13) PreDetermined

\*

fx \* \*\* 14) Default Port

\*

fx \* \*\* 15) HTTP Port

fx\*\* 16) S/R same determined port

## CHANNEL

fx\*\* 17) Open Channel

## PROXY

fx\*\* 18) proxy

\*

fx \* \*\* 19) Translating

Exhibit E - SN 10\676,174  
 Inventors Krtolica/Kukoleca  
 One Sheet